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Michael Richard Richardson

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EXAMINER

MCKIE, GINA M

ART UNIT

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11/19/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/521,745

Applicant(s)RICHARDSON, MICHAEL
RICHARD**Examiner**

GINA MCKIE

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2010.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1 and 3 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 24 August 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the amendment filed August 24, 2010. Claims 1 and 3 remain pending in the application.

- Claim 1 is currently amended.
- Claims 2 and 4 have been previously canceled.
- No claims are new.

Response to Arguments

Drawings

2. Applicant's arguments, see REMARKS, page 5, lines 17-23, filed August 24, 2010, with respect to the objection to the drawings for failing to show every feature of the invention specified in the claims have been fully considered. The objection to the drawings for failing to show the "sinusoidal window" specified in the claims has been withdrawn in view of the submitted replacement drawing sheet.

Claim Rejections – 35 USC § 112, first paragraph

3. Applicant's arguments, see REMARKS, page 6, line 7- page 7, line 3, filed August 24, 2010, with respect to the rejections of claims 1 and 3 under 35 USC § 112, first paragraph as failing to comply with the enablement requirement have been fully

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considered. The rejections under 35 USC § 112, first paragraph of claims 1 and 3 have been withdrawn.

Claim Rejections – 35 USC § 112, second paragraph

4. Applicant's arguments, see REMARKS, page 7, lines 4-6, filed August 24, 2010, with respect to the rejection of claims 1 and 3 under 35 USC § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention have been fully considered. The 35 USC § 112, second paragraph rejection of claims 1 and 3 has been withdrawn in view of the amendments to claims 1 and 3.

Claim Rejections – 35 USC § 103

5. Applicant's arguments with respect to the rejection of independent claim 1 under 35 U.S.C. 103(a) as being unpatentable over Fielder et al. (US 5,109,417) have been considered but are moot in view of the new ground(s) of rejection.

New Grounds of Rejection

6. Applicant has submitted a replacement drawing sheet illustrating the claimed time domain sinusoidal function with zero crossings coinciding with the position of each of the regular bursts of unwanted signal. Applicant amended claim 1 to recite, "...generating a time domain sinusoidal ~~window~~ function using said established timing characteristics, said time domain sinusoidal ~~window~~ function ~~being a sinusoidal~~ function

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having a zero crossing ~~substantially~~ coinciding with the position of each of the regular bursts of unwanted signal ...” Therefore, the amendments to claim 1 and the replacement drawing sheet illustrating the sinusoidal function, necessitate the new grounds of rejection presented below because the amendments require further search and consideration by the examiner.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Padmanabhan et al. (A Practical Approach to Digital Signal Processing, 2001, New Age International, pages 156-162).

Regarding claim 1:

As shown in figures 3.16-3.19, Padmanabhan discloses a method for digitally processing a received signal in a frequency domain containing regular bursts of unwanted signal with the received signal (**see FIG. 3.16 which illustrates the waveform that FFT output reflects and is considered as the received signal**), the method comprising the steps of:

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- (i) establishing timing characteristics of the regular bursts of unwanted signal to establish their positions in a portion of said received signal (**see FIG. 3.16 and page 156, lines 33-38; “The effect appears every window width T, (freq. $F = 1/T$).”**);
- (ii) generating a time domain sinusoidal function using said established timing characteristics, said time domain sinusoidal function having a zero ~~crossing~~ value coinciding with the position of each of the regular bursts of unwanted signal (**see FIG. 3.19 and page 157, lines 1-11; “Other weightings have been derived which reduce the importance of samples at the edge of the window.”**)and
- (iii) applying the generated sinusoidal function to said signal portion to selectively reduce the amplitude of said regular bursts of unwanted signal relative to other elements of said received signal in an output signal (**see FIG. 3.19 and page 160, lines 1-6; “It is effective a raised cosine function. Fig. 3.19 shows the signal and its value after multiplication with the Hanning window.”**).

Padmanabhan does not specifically disclose wherein the time domain function is a sinusoidal function with a zero crossing coinciding with the position of each of the regular bursts of unwanted signal.

Rather, in Padmanabhan, the Hanning window as shown in FIG. 3.19 has zero values coinciding with the position of each of the regular bursts of unwanted signal.

Nevertheless, it would be obvious to one of ordinary skill in the art that whether or not the function illustrated in FIG. 3.19 "crosses" zero or not, the value is zero at the position that coincides with the regular bursts of unwanted signal which occur at the

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edges of the window. Therefore, the yielded results would be predictable and equivalent to one of ordinary skill in the art.

By applying the theory shown in FIG. 3.19 to the waveform shown in FIG. 3.16b, the result would be a waveform with a zero value where the discontinuities in the input signal are. Given the theory shown in FIG. 3.19 and the dilemma presented in FIG. 3.16, it would be obvious to one of ordinary skill in the art to multiply the waveform in FIG. 3.16 by a waveform with a zero coinciding with the discontinuities in order to reduce the amplitude of unwanted regular bursts of unwanted signal as shown in FIG. 3.16b.

The theory of removing regular bursts of unwanted signal using a sinusoidal function with zero values/crossings that coincided with the position of the regular bursts of unwanted signal was known at the time the present invention was made (as shown by Padmanabhan).

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Padmanabhan as applied to claim 1 above, and further in view of Daspit et al. (U.S. Patent No. 3,754,101).

Regarding claim 3:

Padmanabhan discloses a method according to claim 1, further comprising the steps of:

- (iv) applying a Fourier transform to the output signal to provide a transformed signal (see Padmanabhan, page 160, lines 15-24; “If we perform the FFT of this signal, we would get a spectrum...”).

However, Padmanabhan does not specifically disclose: (v) applying an algorithm to restore the shape of peaks in the transformed signal to an approximation of their form in the absence of said regular bursts of unwanted signal.

Daspit, however, discloses applying an algorithm to restore the shape of peaks in the transformed signal to an approximation of their form in the absence of said unwanted signal (see col. 4, lines 21-24 and 40-44 where Daspit discusses double sideband suppressed carrier amplitude modulation).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the invention of Padmanabhan as taught by Daspit and apply an algorithm to restore the shape of peaks in the transformed signal to an approximation of their form in the absence of said unwanted signal elements, thus allowing the retaining of only the useful spectral elements (Daspit, col. 4, lines 36-40).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GINA MCKIE whose telephone number is (571)270-5148. The examiner can normally be reached on Mon-Fri, 9:00 AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gina McKie/

Examiner, Art Unit 2611

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611